

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Is glaucoma comprehension associated with psychological disturbance and vision-related quality of life for glaucomatous patients? a cross sectional study
AUTHORS	Kong, Xiangmei; Zhu, Wenqing; Hong, Jiaxu; Sun, Xinghuai

VERSION 1 - REVIEW

REVIEWER	Carolin Gall Institute of Medical Psychology Otto-von-Guericke-University Magdeburg Germany
REVIEW RETURNED	04-Mar-2014

GENERAL COMMENTS	<p>Kong et al. conducted a prospective, cross sectional study to analyze the relation between glaucoma “cognition” as independent variable and depression and anxiety as dependent variables.</p> <p>The sample (n=500) comprised adult Chinese patients suffering glaucoma who visited the Hospital of Fudan University (Shanghai) from July 2012 till November 2012. The researches recorded sociodemographic as well as clinical data. Participants filled in a glaucoma cognition questionnaire, the Hospital Anxiety and Depression Scale (HADS) and the National Eye Institute-Visual Function Questionnaire 25 (NEI-VFQ 25).</p> <p>The authors reported that glaucoma cognition was negatively correlated with HADS depression scale, i.e., a better “cognition” was accompanied by a reduced risk for depression. Better “cognition” was also associated with better scores for some NEI-VFQ 25 subscales. The authors point to the potential of extended patient education on their risk for psychiatric diseases as well as for their subjectively perceived quality of life.</p> <p>The paper is generally well written and presents results that are worth being published.</p>
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	<p>Major issues</p> <p>The term “cognition” should be avoided and replaced by an appropriate term.</p> <p>“glaucoma cognition” might be misleading since cognition usually refers to information processing (attention, perception, learning, problem solving, decision making, ...)</p> <p>The discussion can be improved and literature about the NEI-VFQ subscale structure is missing. It may be ok to calculate traditional subscales of the NEI-VFQ but actually some “scales” are in fact only single items. This is one reason why other researchers have avoided calculation of 12 subscales. Instead, Rasch analyses was used to justify metric analyses of NEI-VFQ data. Several studies have shown that the NEI-VFQ structure based on Rasch analyses justifies two major scales.</p> <p>Pesudovs K, Gothwal VK, Wright T, Lamoureux EL. Remediating serious flaws in the National Eye Institute Visual Function Questionnaire. J Cataract Refract Surg. 2010</p> <p>Marella M, Pesudovs K, Keeffe JE, O'Connor PM, Rees G, Lamoureux EL. The psychometric validity of the NEI VFQ-25 for use in a low-vision population. Invest Ophthalmol Vis Sci. 2010</p> <p>Gall C, Brösel D, Sabel BA. Remaining visual field and preserved subjective visual functioning prevent mental distress in patients with visual field defects. Front Hum Neurosci. 2013</p> <p>Minor issues</p> <p>- number of positions after decimal point varies between 1 and 3.</p> <p>p.8; l .28 “The mean scores and standard deviations (SD)</p>
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	<p>were calculated (...)"</p> <p>- scores are probably rather skewed, depending on the deviation from normal distribution M and SD may be not reliable.</p> <p>p.8; l. 39 "For the comparison between different cognitive levels (...)"</p> <p>-Information on how cognitive scores were transformed into categories and the reasoning behind could be given earlier (in methods part).</p> <p>p.8; l. 42 "(...) variable, adjusted with or without demographic and clinical features."</p> <p>There should be good reasons to control for some variables such as age; gender; economic burden, severity and duration of glaucoma could be used. Explanation for consideration of further variables is missing</p> <p>p.10; l. 52 "Only compliance had a significant influence on the level of depression of</p> <p>every two groups being compared."</p> <p>What does "every two groups compared" mean? Calculating an ANOVA you compared all 3 groups simultaneously or do you refer to Bonferroni?</p> <p>p.12; l.4"However, the authors did not use objective measures of psychological</p> <p>disturbance"</p> <p>->You also don't use objective measures since patients subjectively rated the items. Whenever "objective" is used for questionnaire results, this term is not appropriate.</p> <p>p.13; l. 31 "After being informed about the glaucoma diagnosis but before randomization"</p> <p>->which randomization??? Please clarify</p> <p>p.14; l. 7 "SGC is thus an effective platform to improve</p>
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	<p>patients' knowledge of the disease and compliance with treatment.”</p> <p>-> Maybe more interested patients with better coping strategies joined SGC. It seems relevant to me to consider the influence of potential third variables..</p> <p>Discussion</p> <p>-statistical procedures should be discussed such as disadvantage of categorizing metric variables etc.</p> <p>Table 2 Is it necessary to provide the rank information? If so, please explain why.</p> <p>Table 3 This table is confusing because of the amount of information. The models are not mentioned in the results part. Is it necessary to provide this information to the reader?</p> <p>Figure 1 HADS Scales range from 0-21, why not use a matched scaling of y axis from 0-21</p> <p>Means of the (sub)scales are plotted. Figure legend: “The association between cognitive level and the subscores (...)” this is not represented in the figure.</p> <p>Same for Figure 2</p> <p>Figure 2 Why did you focus on these 4 NEI-VFQ 25 Scales (Vision, Near, Far, Composite) and do not show all NEI-VFQ scales that correlate with what is referred to as “cognition”</p>
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REVIEWER	Spaeth, George Wills Eye Hospital USA
REVIEW RETURNED	06-Mar-2014

GENERAL COMMENTS	I recommend rejection of this mss. The reserach question is
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	<p>important. However, the authors over estimate the value of what they found. Figures 1 and 2 show that the differences between psychological indices and cognitive level are slight. They do not demonstrate that these slight differences are due to glaucoma. Perhaps they are simply related to bright people having a more positive outlook on life, which might be why they are brighter, because they work harder and want to learn more than average individual. The authors state that the psychological aspects of patients are able to be altered. On what basis do they state this? They certainly have not demonstrated this, and it is not self evident. My hunch is that it is far more difficult to treat the psychology than the disease, but that is just a hunch. I am sure that the psychology is important, but they authors have not demonstrated well that anxiety or depression are meaningfully related to what patients know about their glaucoma. If there is a relationship, what studies would be next?</p> <p>I recommend that the authors limit their comments to what they studied, and not extrapolate wildly.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer Name Carolin Gall

Major issues

The term “cognition” should be avoided and replaced by an appropriate term.

“glaucoma cognition” might be misleading since cognition usually refers to information processing (attention, perception, learning, problem solving, decision making, ...)

Response: The word “cognition” in this paper means understanding and comprehension. So, to avoid misleading, “cognition” was changed into “comprehension”.

The discussion can be improved and literature about the NEI-VFQ subscale structure is missing. It may be ok to calculate traditional subscales of the NEI-VFQ but actually some “scales” are in fact only single items. This is one reason why other researchers have avoided calculation of 12 subscales. Instead, Rasch analyses was used to justify metric analyses of NEI-VFQ data. Several studies have shown that the NEI-VFQ structure based on Rasch analyses justifies two major scales.

Response: NEI VFQ-25 is a widely used questionnaire for eye disease study, such as age-related macular degeneration, central retinal vein occlusion, rhegmatogenous retinal detachment, proliferative diabetic retinopathy, Behcet uveitis, dry eye syndrome, and chemical burns from 2003 to 2011.

Besides, the importance of this study was to investigate the relationship among different variables.

1. Deramo VA, Cox TA, Syed AB, et al. Vision-related quality of life in people with central retinal vein occlusion using the 25-item National Eye Institute Visual Function Questionnaire. Arch Ophthalmol. 2003;121:1297–1302.

2. Okamoto F, Okamoto Y, Fukuda S, et al. Vision-related quality of life and visual function following vitrectomy for proliferative diabetic retinopathy. Am J Ophthalmol. 2008;145:1031–1036.

3. Okamoto F, Okamoto Y, Hiraoka T, et al. Vision-related quality of life and visual function after retinal detachment surgery. Am J Ophthalmol. 2008;146:85–90.

4. Revicki DA, Rentz AM, Harnam N, et al. Reliability and validity of the National Eye Institute Visual Function Questionnaire-25 in patients with age-related macular degeneration. Invest Ophthalmol Vis Sci. 2010;51:712–717.

5. Mizuno Y, Yamada M, Miyake Y. Association between clinical diagnostic tests and health-related quality of life surveys in patients with dry eye syndrome. Jpn J Ophthalmol. 2010;54: 259 –265.

6. Le Q, Chen Y, Wang X, et al. Vision-related quality of life in patients with ocular chemical burns. Invest Ophthalmol Vis Sci. 2011;52:8951-8956.

Minor issues

- number of positions after decimal point varies between 1 and 3.

p.8; l. 28 "The mean scores and standard deviations (SD) were calculated (...)"

- scores are probably rather skewed, depending on the deviation from normal distribution M and SD may be not reliable.

Response: We also provided the range of the scores to decrease the possible bias. And in the methods section this point has been added.

p.8; l. 39 "For the comparison between different cognitive levels (...)"

-Information on how cognitive scores were transformed into categories and the reasoning behind could be given earlier (in methods part).

Response: The categories of comprehensive scores and the reason were added in the methods section.

p.8; l. 42 "(...) variable, adjusted with or without demographic and clinical features."

There should be good reasons to control for some variables such as age; gender; economic burden, severity and duration of glaucoma could be used. Explanation for consideration of further variables is missing

Response: We did analyses between the large number of variables and found that many of them such as age, gender, visual acuity, the level of intraocular pressure, severity and duration of glaucoma did show relationships with HADS scores and NEI VFQ-25 scores. Because the aim of this paper was glaucoma comprehension, we control these variables and provided the complete data without or with different levels adjustments in Table 3.

p.10; l. 52 "Only compliance had a significant influence on the level of depression of every two groups being compared."

What does "every two groups compared" mean? Calculating an ANOVA you compared all 3 groups simultaneously or do you refer to Bonferroni?

Response: This means between low versus moderate, between low versus high, and between moderate versus high levels. In the result part, it has been added and gets more clarified.

p.12; l.4 "However, the authors did not use objective measures of psychological disturbance"

->You also don't use objective measures since patients subjectively rated the items. Whenever "objective" is used for questionnaire results, this term is not appropriate.

Response: It is true that the word "objective" is not appropriate. We changed the statement in the text into "However, the authors only focused on adherence."

p.13; l. 31 "After being informed about the glaucoma diagnosis but before randomization"

->which randomization??? Please clarify

Response: The words "but before randomization" have been removed.

p.14; l. 7 "SGC is thus an effective platform to improve patients' knowledge of the disease and compliance with treatment."

-> Maybe more interested patients with better coping strategies joined SGC. It seems relevant to me to consider the influence of potential third variables.

Response: The conclusion that "understanding of glaucoma as an independent factor variable of psychological disturbance and vision-related quality of life for glaucomatous patients" was drawn by multiple regression analysis, but not restricted to SGC members. Maybe someone would be interested in how to improve patients' comprehension of glaucoma; we provide our experience that SGC might be an effective platform.

Discussion

-statistical procedures should be discussed such as disadvantage of categorizing metric variables etc.

Response: This point has been added to the discussion part.

Table 2 Is it necessary to provide the rank information? If so, please explain why.

Response: The rank information in Table 2 could provide directly impression of the subtypes of each questionnaire, especially for NEI-VFQ 25 questionnaire.

Table 3 This table is confusing because of the amount of information. The models are not mentioned in the results part. Is it necessary to provide this information to the reader?

Response: I think it is necessary to provide the complete data to the reader. The details of the models and the reasons why to use these models were added in the results part. "The analyses showed that many of the variables such as age, gender, educational level, visual acuity, severity and duration of glaucoma did show relationships with HADS scores and NEI VFQ-25 scores. To investigate the relationship between glaucoma comprehension and HADS, NEI VFQ-25, other variables needed to be controlled. Table 3 showed the complete result with or without adjustments of other variables".

Figure 1 HADS Scales range from 0-21, why not use a matched scaling of y axis from 0-21 Means of the (sub)scales are plotted. Figure legend: "The association between cognitive level and the subscores (...)" this is not represented in the figure.

Same for Figure 2

Response: The largest value of the column in Table 1 is about 16. If using 0-21 as the scaling of y axis, the upper part of the whole figure would be quite empty. The largest value of the four columns in Table 2 is about 80 and the lowest is about 48, so we choose 30-80 as the scaling bar. If using 0-100 as the scaling of y axis, the differences among groups will not be well shown.

Figure 2 Why did you focus on these 4 NEI-VFQ 25 Scales (Vision, Near, Far, Composite) and do not show all NEI-VFQ scales that correlate with what is referred to as "cognition"

Response: Totally there are 13 subscales in NEI-VFQ 25 Scales. We once tried to listed all of them, but the figure was quite complicated and the emphasis was not well shown. From the result of analysis, the comparison of four subscales (vision, Near, Far, Composite) showed significant differences, so we only listed these four scales.

Reviewer Name G Spaeth

I recommend rejection of this mss. The reserach question is important. However, the authors over estimate the value of what they found. Figures 1 and 2 show that the differences between psychological indices and cognitive level are slight.

They do not demonstrate that these slight differences are due to glaucoma. Perhaps they are simply related to bright people having a more positive outlook on life, which might be why they are brighter, because they work harder and want to learn more than average individual. The authors state that the psychological aspects of patients are able to be altered. On what basis do they state this? They certainly have not demonstrated this, and it is not self evident. My hunch is that it is far more difficult to treat the psychology than the disease, but that is just a hunch. I am sure that the psychology is important, but they authors have not demonstrated well that anxiety or depresssion are meaningfully related to what patients know about their glaucoma. If there is a relationship, what studies would be next?

I recommend that the authors limit their comments to what they studied, and not extrapolate wildly.

Response: This is an exploratory study. Glaucoma is a lifelong disease, and the psychological disturbance and vision-related quality of life have been paid more and more attention to. But by now, there are few methods to relieve glaucomatous patients' anxiety and depression, and to better their quality of life. Through this large sample study, we chose questionnaires for quantification and

analysis, investigated the possible relationships among different variables, and found that glaucoma comprehension was associated with depression and vision-related quality of life independently. The differences shown in figures were not so slight and the statistical results was $P < 0.05$. Owing to the complex of glaucoma and the complex of psychological aspects, we would like to express our results more carefully and changed the title to "Understanding of glaucoma might be an independent variable of psychological disturbance and vision-related quality of life for glaucomatous patients, a cross sectional study". And the next plan is to conclude a prospective case-control study. Measure the patients' psychological disorder and vision-related QoL when they were initially diagnosed, educate part of them about glaucoma knowledge, and then repeat the measurements. The comparison before and after education and comparison between two groups might give us more hints.